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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,892	01/12/2007	Andrea Romano	05788.0391	9928

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EXAMINER	
STAFFORD, PATRICK	

ART UNIT	PAPER NUMBER
2828	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/573,892	ROMANO ET AL.	
	Examiner	Art Unit	
	PATRICK STAFFORD	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *25-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *25-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/29/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-24 cancelled 29 March 2006.

Claims 25-48 added 29 March 2006.

Claim Objections

Claims 25, 34, 36-38, 41 and 47 are objected to because of the following informalities:

The word "tunable" is misspelled as "tuneable". Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 25-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zorbedian et al (U.S. Patent 6,526,071, hereafter '071) in view of Jin (U.S. Patent Application Publication 2002/0054614, hereafter '614).

Claim 25: '071 teaches a tunable laser system configured to emit output radiation on a single longitudinal mode at a laser emission frequency (col. 2, lines 46-49 and col. 10, lines 24-25), comprising:

an external cavity having a physical length (col. 5, lines 56-58 and Fig. 2A) and a plurality of cavity modes (col. 10, lines 16-25);

a gain medium to emit an optical beam into the external cavity (col. 5, lines 27-29 and Fig. 2A, part 202);

a channel allocation grid element being arranged in the external cavity to define a plurality of pass bands substantially aligned with corresponding channels of a selected wavelength grid (col. 6, lines 4-9 and Fig. 2A, part 226), the pass bands having a bandwidth at full-width half maximum (FWHM) (col. 11, lines 62-63 and Fig. 6B); and

a tunable element arranged in the external cavity to tunably select one of the pass bands so as to select a channel to which to tune the optical beam (col. 5, lines 59-60 and Fig. 2A, part 262), wherein said physical length of the external cavity is not larger than 15 mm (col. 11, lines 47-50).

'071 does not explicitly teach the bandwidth FWHM of the channel allocation grid element is 2 to 8 GHz. However, '614 teaches a tunable laser system with an external laser cavity (Fig. 1) with the bandwidth FWHM of the channel allocation grid element is 2 to 8 GHz (paragraph 39, lines 12-15) in order to assure a single wavelength mode of operation across the entire gain spectral range. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a tunable laser system with an external laser cavity with the bandwidth FWHM of the channel allocation grid element is 2 to 8 GHz in order to assure a single wavelength mode of operation across the entire gain spectral range.

Claim 26: '071 and '614 teach the laser system according to claim 25. '614 teaches the bandwidth of the channel allocation grid element at FWHM is 3 to 6 GHz (paragraph 39, lines 12-15).

Claim 27: '071 and '614 teach the laser system according to claim 25. '071 teaches the physical length is not larger than 12 mm (col. 11, lines 47-50).

Claim 28: '071 and '614 teach the laser system according to claim 25. '614 teaches the laser emission frequency is selected on a single cavity mode within a given frequency accuracy which is not smaller than 0.5 GHz and the bandwidth of the channel allocation grid element at FWHM is selected so that the minimum distance between two adjacent cavity modes of the external cavity within the pass bands of the channel allocation grid element is not larger than twice the frequency accuracy (paragraph 39, lines 9-18).

Claims 29-30: '071 and '614 teach the laser system according to claim 25. '071 teaches the selected wavelength grid has a channel spacing which is a function of the FSR of the cavity and the integer series of each element (col. 11, lines 35-45 and Equation IV). '071 and '614 do not explicitly teach the selected wavelength grid has a channel spacing of 25 to 50 GHz. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the selected wavelength grid has a channel spacing of 25 to 50 GHz, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Claim 31: '071 and '614 teach the laser system according to claim 25. '071 teaches the channel allocation grid element comprises a Fabry-Perot etalon (col. 6, lines 27-30).

Claims 32 and 33: '071 and '614 teach the laser system according to claim 31. '071 teaches the Fabry-Perot etalon is placed at an inclination angle with respect to the optical beam (col. 7, lines 52-54). It does not explicitly teach the angle is of 0.4° to 0.8° to the perpendicular of the optical beam. However, it would have been obvious to one having ordinary skill in the art at the time

the invention was made to have the Fabry-Perot etalon placed at an inclination angle of 0.4° to 0.8° to the perpendicular of the optical beam, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Claim 34: '071 and '614 teach the laser system according to claim 25. '614 teaches the tunable element has a bandwidth at FWHM of 50 to 250 GHz (paragraph 38, lines 1-5).

Claim 35: '071 and '614 teach the laser system according to claim 25. '614 teaches the tunable element has a bandwidth at FWHM of 50 to 100 GHz (paragraph 38, lines 1-5).

Claim 36: '071 and '614 teach the laser system according to claim 25. '071 teaches the tunable element comprises a tunable mirror placed at one end of the external cavity (col. 5, line 29 and Fig. 2A, part 222).

Claim 37: '071 and '614 teach the laser system according to claim 36. '071 teaches the tunable mirror is an electro-optical element that comprises a waveguide formed onto a substrate and a diffraction grating formed onto the waveguide (col. 9, lines 48-53).

Claim 38: '071 and '614 teach the laser system according to claim 37. '071 teaches the tuneable mirror further comprises a cladding layer that fills at least the interstices of the diffraction grating, said cladding layer comprising a liquid crystal material (col. 7, lines 58-61).

Claim 39: '071 and '614 teach the laser system according to claim 25. '614 teaches the gain medium is a semiconductor laser diode (paragraph 31, lines 1-3).

Claim 40: '071 and '614 teach the laser system according to claim 25. '071 teaches the laser emission frequency is selected on a single transversal cavity mode (col. 10, lines 24-25).

Claims 41-48: Regarding claims 41-48, the arguments applied above to the apparatus described with regards to claims 25-40 are applicable to the method claims as well.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PATRICK STAFFORD whose telephone number is (571)270-1275. The examiner can normally be reached on M-Th 7:30-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PJS

/Minsun Harvey/
Supervisory Patent Examiner, Art Unit 2828